IT Initiative Supplement

February 25, 2010

I. Project Description

Project Title: State Longitudinal Data System (SLDS)

Brief Description of the Project Title: Establish a data warehouse, associated processes and tools for K-12 education data.

Statewide Priority: High

Agency Priority: High

Estimated Completion Date: June 2014

IT Project Biennium:2013

Request Number: 176

Version: 2013-3501-A-61

Agency Number: 3501

Agency Name Office of Public Instruction

Program Number: 06

Program Name: State Level Activities

A. Type of Project (check all that apply)

New

B. Type of System (check all that apply)

Mid-Tier
Web

II. Narrative

C. Executive Summary:

Project Purpose and Objectives: In this project, OPI will: (1) create an enterprise-wide data architecture to map the future for Montana's educational data system, (2) create a data governance structure, (3) establish a data warehouse and migrate data from numerous legacy data systems to the data warehouse, and (4) implement business intelligence tools to make the data accessible for many different users. This project is a four year effort beginning in 2010 and is funded via a federal grant for $5,800,000.

Technical Implementation Approach: The technical approach will be defined during the first phase of the project, which is scheduled to conclude in December 2010.

Project Schedule and Milestones:
Please note that project planning is taking place in 2010, all dates after 2010 are high level estimates.
Develop Enterprise Data Architecture 5-1-10 to 10-1-10
Develop Requirements for data warehouse 5-1-10 to 12-1-10
Issue RFP for data warehouse build 12-31-10
Develop and implement data governance 4-1-10 to 12-31-10
Build data warehouse and load data 1-1-11 to 1-1-13
Implement business intelligence tools 1-1-11 to 7-1-13

D. Business and IT Problems Addressed

The agency does not currently have a system that tracks K-12 data longitudinally. Such a system is necessary to track performance and assess impact of programs on student achievement. The US Department of Education has been encouraging all states to establish a longitudinal data system.

E. Alternative(s)

Alternatives Considered: An RFP will be issued for the data warehouse and all alternatives will be considered at that time.

Rationale for Selection of Particular Alternative: N/A

F. Narrative Detail

The Office of Public Instruction has made significant advancements in the collection and storage of student level data since the initial deployment of the student information system in 2006, but the implemented system has limitations that prevent its ease of use in providing analysis of longitudinal data. In order to allow accurate and robust longitudinal analysis of the data, a true data warehouse is needed.

The SLDS project will provide data necessary for improving education in Montana in a timely, accurate, secure and usable form. Toward that end, this project has five objectives:

1) **Enterprise-Wide Data Architecture**
   As with many mature organizations, the data architecture of OPI grew organically as needs arose over a number of years, so OPI does not have a formalized Enterprise-wide Data Architecture. In order to fully leverage the data collected throughout the agency and to easily enforce data integrity and quality standards, a true Enterprise-wide Architecture is needed. Prior to starting a major project such as the establishment of a data warehouse, an organized effort to develop a proposed end state architecture and a roadmap as to how the final architecture will be achieved needs to be completed.

2) **Data Governance**
   OPI does not have a formal governance structure in place. This grant will help to develop such an organizational structure which will define roles for its members, create data policies, procedures and plans for implementing the data warehouse and ensuring data quality. The data governance team will be responsible for data collection, ownership, data management and storage as well as data quality. Training will be provided to members of the team and job-specific competencies will be established to ensure the team members skills are brought up to date. There will be an office-wide effort to develop common practices for all data systems at OPI.

3) **Establish the data warehouse**
   The existing student information system lacks the data management and retrieval functionality necessary to be considered a data warehouse. This results in difficulties with analyzing data over time. OPI has established an interim method to collect and store critical student data, but the method employed is time consuming, involves many work-arounds, and requires an exhausting number of quality assurance checks each time a work-around is performed. In particular, a formal analysis of the table structure was not conducted, which has resulted in a structure that is not optimized for the analysis of data. The implemented system also lacks a robust extract, transform, load (ETL) process. This shortcoming can contribute to data interpretation and data quality issues as OPI moves forward, as well as the potential of errors in reporting data to various entities.

4) **Migrate data from numerous legacy data systems to the data warehouse**
   The primary data store for data used for federal reporting is the Student Information System, but certain key information is stored outside of this structure. A robust data warehouse will provide OPI the ability to pool all required information into one data store in a controlled environment. By putting all data in one central data store, the interpretation and use of the data can be more easily

controlled which in turn will reduce the risk of improperly disclosed information and/or the creation of data quality issues.

5) **Implement business intelligence tools**
OPI does not currently utilize a true business intelligence (BI) tool. Analysis is completed using common office automation tools such as Excel and Access. The lack of a tool that can easily mine and extract data limits the wide availability and analysis of the data. A BI product will enable OPI easily to develop and store analysis for use by a broad community as well as providing the ability to put powerful analysis capabilities into the hands of key individuals within OPI and the LEAs.

III. Costs

G. Estimated Cost of Project:

1. Personnel Services – IT Staff: 784,000

2. Personnel Services – Non IT Staff: 0

3. Contracted Services: 690,000

4. ITSD Services: 0

5. Hardware: 40,000

6. Software: 3,500,000

7. Telecommunications:0

8. Maintenance: incl in Software budget

9. Project Management: incl in IT staff

10. IV&V: 0

11. Contingency: 0

12. Training:23,000

13. Other: 761,457

Total Estimated Costs: 5,798,457

Total Funding: 5,798,457

IV. Funding

H. Funding

1. Fund: 03002

2. Amount: 5,798,457

3. Total Costs: 5,798,457

Cash/Bonded: Cash

Bill Number: HB 002-DP

V. Cost upon Completion

1. Operating Costs upon Completion

FTE:0

Personal Services Costs:0

Operating Costs:0

Maintenance Expenses:0

Total Estimated Costs:0

2. Funding Recap

Fund Type:

Amount:

Total Funding:

V. Risk Assessment

A. Current IT Infrastructure Risks

1. Current application 10+ years old? **N/A**
   Date of last major upgrade?

2. Current application is based on old technology? **N/A**
   If yes, what is the current hardware platform, operating system, and programming languages used to support the application?

3. Is the agency not capable of maintaining the current application with internal technical staff? **N/A**
   If yes, who supports the application today?

4. Other IT infrastructure risks? **No**
   If yes, provide further detail.

B. Current Business Risks

1. What are the risks to the state if the project is not adopted?
   The state will not be able to meet the data requirements as determined by the US Dept of Education.

2. Does the current application meet current business requirements? **No**
   If "no", what specific business functions does the application lack?
   The OPI does not currently have a system that houses and reports on K-12 education data longitudinally.

C. Project Risk Assessment

1. Describe any major obstacles to successful implementation and discuss how those obstacles will be mitigated.

Table H Risk Assessment

Description	Severity (H/M/L)	Probability of Occurrence (%)	Estimated Cost	Mitigation Strategy
Project risks will be established during the initial planning phase of the project (May – June 2010)				
